

*Northern Bobwhite Quail Action Plan
for Virginia*



Acknowledgements

This plan was developed by the Wildlife Division's Small Game Committee. Gary W. Norman and K. Marc Puckett served as lead authors. Helpful comments on earlier drafts were received from federal, state, and nongovernmental agencies and the Director's Quail Focus Group.

Introduction

Populations of northern bobwhite quail and other bird species with related habitat requirements have experienced severe long-term declines in Virginia over the past 50 years. In colonial times, farming created habitats that began to favor quail. As land was cleared and farmed, quail populations flourished. For perhaps 200 years or more, quail were one of the most common birds of the rural Virginia landscape. During the first half of the 20th century, as a shift from a rural-farm to urban-industrial economy began, idled and abandoned farms continued to support quail populations. However, since then major land use changes have taken place. Virginia's agricultural landscape became dominated by large, intensively managed crop fields, fescue pastures, and hayfields.

Total farmland acres declined. In 1900, approximately 80% of Virginia's landscape was in open agricultural land. Today agricultural lands make up only 34% of our landscape. Many of the formerly open farm fields are now dominated by intensively managed pine forests. While cut-over timber lands still provide some early-succession cover, plant diversity is low and productivity for quail is poor. The loss of early succession habitat, particularly nesting cover and brood range, has been identified as the most significant factor limiting quail populations. The bobwhite is a legacy species in Virginia and their decline has led to concerns about ecological, economic, and recreational impacts throughout rural Virginia.

Quail Population Status

Data from the North American Breeding Bird Survey (BBS) indicate that quail have declined 4.2% annually between 1966 and 2007 (Fig. 1). During the past 15 years the Department has conducted two separate surveys to monitor quail population trends. The quail call count survey suggests populations have declined 4.0% annually (Fig. 2) and the rural mail carrier survey indicates populations are declining at a 2.9% annual rate (Fig. 3). The decline in quail is not unique to Virginia as the range-wide population has declined 66% since 1980 (Dimmick et al. 2002). Populations of other bird species that are dependent on grasslands and shrub habitats have declined at similar rates. Declining grassland species include the Henslow's sparrow and grasshopper sparrow and shrub dependent species that are likewise declining include the field sparrow, brown thrasher, and yellowbreasted chat. According to Virginia's State Wildlife Action Plan, 26% (4 of 15 species) of the birds listed as Tier I species (Species of Greatest Conservation Need) are early-succession habitat dependent. The bobwhite quail is a Tier IV species,

meaning, while it is a species of concern, other species have suffered greater population declines and have smaller populations. Concerning Tier III and Tier IV, 16% and 22% of the birds in each of these tiers, respectively, are early-succession habitat dependent. No Tier II bird species are early-succession habitat dependent. Of all 96 bird species of concern, 19 are considered to be early-succession habitat dependent, or nearly 20%.

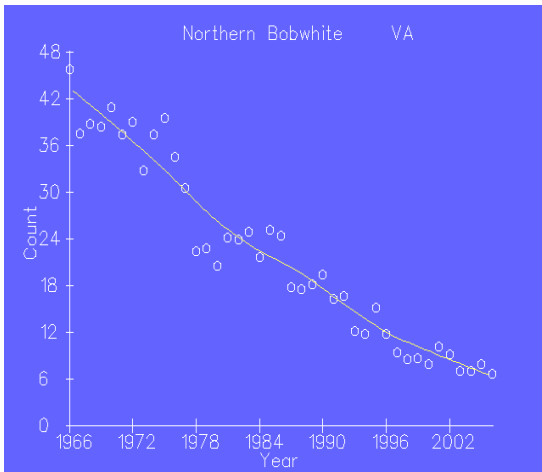


Figure 1. Quail trends from the Breeding Bird Survey for Virginia, 1966-2006.

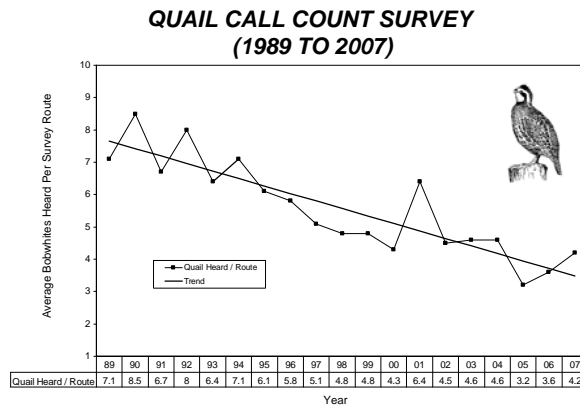


Figure 2. Quail call count survey data for Virginia, 1989-2007.

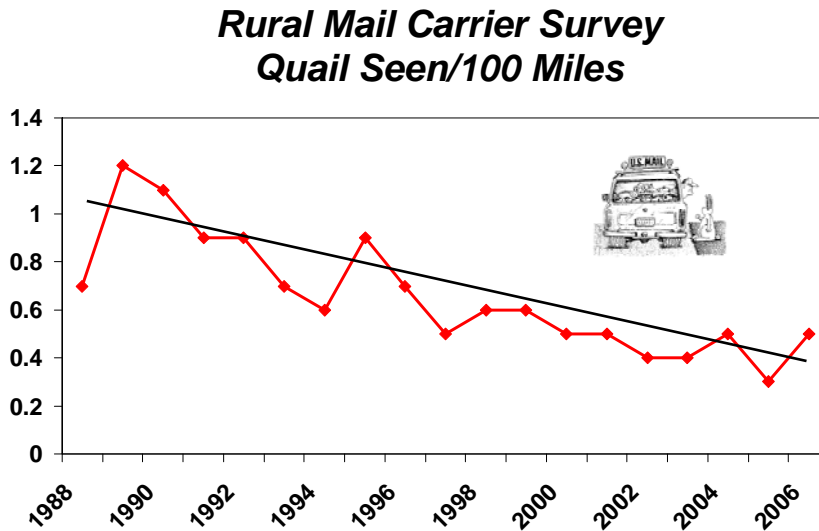


Figure 3. Quail seen on rural mail carrier survey in Virginia, 1988-2006.

Quail Harvest and Effort

Quail harvest in Virginia was approximately 1.5 million birds in 1970 (Table 1)! Nearly one-third of Virginia license buyers hunted quail in 1970. Since then we have seen a steady decline in the number of quail hunters, their effort, and harvest. The number of Virginia quail hunters has declined approximately 92% since 1970. Since 1989 the number of quail hunters in Virginia has declined 8.0% annually. Only 7% of licensed hunters hunted quail in 2004. If this rate continues, the future of wild quail hunting may be essentially lost in Virginia. Nationally, the number of small game hunters has declined approximately 30% since 1996 according to the 2006 National Survey of Fishing, Hunting and Wildlife Associated Recreation (USFWS 2006).

Table1. Summary of quail harvest and hunters in Virginia.

Year	# Hunters	# Days	# Harvested	Harvest/Day	% Licensees
1965	86,713	710,905	1,380,405	1.9	24
1968	114,337	669,807	1,178,720	1.8	29
1969	126,355	765,224	1,302,670	1.7	31
1970	132,606	877,308	1,549,250	1.8	32
1973	143,432	893,191	1,182,890	1.3	30
1978	68,880	334,409	413,578	1.2	18
1983	40,086	213,759	346,354	1.6	11
1984	36,432	191,453	307,957	1.6	11
1989	28,249	155,558	188,680	1.2	9
1993	30,621	190,677	258,738	1.4	11
1994	27,765	141,026	185,136	1.3	10
1995	25,287	128,704	202,370	1.6	9
1996	22,305	134,433	135,588	1.0	8
1997	22,999	111,257	163,599	1.4	9
1998	18,938	81,704	102,157	1.2	7
1999	18,174	82,480	110,566	1.2	7
2001	16,632	62,679	80,587	1.3	7
2004	10,761	33,796	67,853	2.0	5
2005	9,891	55,361	66,384	1.4	4

Economic Impact of Quail Hunting in Virginia

In 1991 the direct contribution of quail hunters to the Virginia economy was estimated to be nearly \$26 million and the total economic impact approached \$50 million. However, as quail hunting effort has declined, so has the direct and indirect economic input to rural communities from quail hunting. The total loss to the Virginia economy was more than \$23 million from declining quail hunter expenditures between 1991 and 2004. The average annual loss to the Virginia economy during this 14-year period was nearly \$1.7 million. This loss of hunter-expended resources and job opportunities are particularly detrimental to rural economies where other sources of income are limited. Estimates of the direct expenditures by quail hunters and indirect economic impact on related businesses on Virginia's economy were estimated by data from Burger et al. (1999), Wright (2001), Fies (2002) and Jagnow et al. (2006).

Table 2. Estimated economic impact of quail hunters in Virginia.

Year	Number of Quail Hunters	Avg. Expenditures Per Hunters	Total Expenditures	Total Economic Impact
1991	30,621	\$847.98	\$25,956,996	\$50,374,031
1999	18,174	\$1,037.08	\$18,847,892	\$36,564,910
2004	10,761	\$1,290.63	\$13,888,422	\$26,943,538

Previous Quail Management Efforts in Virginia

In 1988, the Virginia Legislature recognized the plight of Virginia's quail and established a Joint Subcommittee to study the problem. In 1996 the Department developed a Quail Management Plan (Capel et al. 1996) that identified the important problems contributing to the decline in quail and strategies to address those problems (Appendix A). The Department was able to implement some of the strategies and some success was realized. However, two key factors that limited the success of the plan were a lack of funding and manpower. Only 35% of the Plan budget was funded and only 1 of 6 positions requested was added. At the time the Quail Team consisted of 4 full-time staff. At the end of the 5-year Quail Management plan, staff were reassigned to District positions except for a Small Game Project Leader.

Northern Bobwhite Conservation Initiative

Due to the region-wide concern over the decline in quail populations, hunters, and harvests, the Directors of the Southeastern Association of Fish and Wildlife Agencies requested that the Southeast Quail Study Group (SEQSG) prepare a plan for quail restoration. The SEQSG produced the Northern Bobwhite Conservation Initiative (NBCI) in 2002. The plan called for the restoration of quail populations to 1980's levels at the state level and by Bird Conservation Region (BCR), ecologically distinct regions with similar bird communities, habitats, and resource management issues which act as the basic avian ecological planning units across North America. Data from the Breeding Bird survey were used to index 1980 and 1999 population levels and to set population goals for the plan. State quail harvest data were used to establish fall hunting and spring breeding populations. Habitat conditions were evaluated based on data from the National Resources Inventory. The plan identified specific habitat treatments and acres needed by state and BCR to restore quail populations to 1980 levels. In 1980, the estimated Virginia quail harvest was 413,576 birds. Range-wide, the plan indicated that habitat restoration was needed on 81.1 million acres of farm, forest, and range land to restore quail populations to 1980 levels. However, the recommended land management practices would change the primary land use on only 6 to 7% of this acreage.

For Virginia, the NBCI goal was to add more than 87,000 coveys to reach 1980 population goals. To attain this goal, habitat restoration in southern pines, agricultural lands, Conservation Reserve Program (CRP), pines, and CRP grasses are identified in Table 3.

Table 3. NBCI goals for quail populations (coveys to be added) and habitat development by Bird Conservation Region (BCR) in Virginia.

BCR Region	BCR Number	Covey Goal	CRP Grass	Improvable Ag Land	CRP Pines	Southern Pines
SE Coastal	27	15,469	8,500	47,292	8,200	499,100
App. Mts.	28	15,076	0	60,300	0	1,500
Piedmont	29	54,650	21,100	191,488	24,400	1,478,700
Atlantic Coast	30	2,082	7,275	3,804	210,200	0
Virginia		87,277	36,875	302,884	242,800	1,979,300

Statewide Total – 2,561,859

Current Quail Management

The Department's Small Game Project Leader is responsible for quail, rabbit, and squirrel conservation programs and currently also serves as the liaison to the agricultural community. District Wildlife Biologists perform numerous jobs for the Department including technical assistance to landowners interested in quail management among other responsibilities like the Deer Management Assistance Program and nuisance bear control.

During the past year the Department responded to 160 requests for information on quail management. Biologists made 35 presentations on quail, controlled burning, or small game management to 895 people. Staff met with 81 landowners or land managers to provide technical assistance for habitat development. Habitat for small game was enhanced on 2,782 acres of state-owned or cooperatively managed lands.

Several Farm Bill programs, managed through the USDA's Natural Resources Conservation Service (NRCS) provide cost-share incentives to farmers to manage their lands for quail and other wildlife. The Conservation Reserve Enhancement Program (CREP) offers two programs, CP-33 (Quail Habitat) and CP-36 (Longleaf Pine) that feature habitat for quail. During 2007, 198 contracts were approved to enhance 1,450 acres of farmland for quail. Sixteen contracts were approved to manage nearly 300 acres of longleaf pine stands that ultimately benefit quail.

While both programs provided significant gains for quail habitat, each program did not reach their potential as additional funding for more acres were available. The original allocation was 3,600 acres in CP-33 and 3,750 acres in CP-36 acres. Of all the federal programs, the Wildlife Habitat Incentives Program has been the most involved for VDGIF staff. Our biologists are responsible for field technical assistance and completion of sign-up for landowners interested in WHIP. It is a labor intensive program for VDGIF staff and USDA staff. However, WHIP has been successful in many ways. Over 550 contracts for WHIP have been approved in Virginia. Not all of these involve early-succession habitat, but the program has done great things for wildlife in Virginia. In 2008, 89 combined WHIP and EQIP contracts were approved for wildlife in Virginia with a total of \$1.2 million in expenditures, the highest ever for wildlife in Virginia. The

downside for all cost-share programs is that as many as half of the contracts signed by landowners are never completed on the ground. For example, over the first 8 years of the Wildlife Habitat Incentives Program, 243 WHIP contracts were completed, at least partially, by enrolled landowners, but 242 were never completed. One reason for this is lack of personnel to conduct frequent follow-up with landowners.

Other Factors Contributing to Bobwhite and Early-Succession Species Decline

While habitat loss is the number one factor in quail population declines, both of Virginia's quail planning efforts have identified numerous potential contributing factors. These include disease, possible direct and indirect effects of herbicides and insecticides, predation, weather patterns, and climate change. Our Department endeavors to address all these factors to the fullest extent possible as funding and staff become available. However, when budgets and staff time are restricted, habitat establishment and education and outreach will remain our highest priorities. Only through educating "the masses" regarding the importance of early-succession habitats, will a reversal of the bobwhite decline ever occur.

To address each: there is little we can do regarding climate / weather pattern change other than remain vigilant, and attempt to mitigate associated habitat declines if, when and where they occur. We are also currently involved in a cooperative quail disease study with personnel from the University of Georgia and Virginia Tech. Specifically, Virginia's quail hunters have agreed to donate quail carcasses for analysis of the prevalence of disease in wild quail populations throughout the Southeast. And, Virginia's Avian Influenza Monitoring and Permitting System should help insure that pen-raised game birds imported into Virginia are disease free. The effects of herbicides and modern insecticides have been well studied. It is generally agreed upon within the quail community that modern pesticides are not having a direct effect on quail survival. They are not killing or physically harming quail. However, it is also agreed that indirect effects, such as the lowering of plant and insect diversity and abundance, can and does limit quail survival in some cases. All efforts will be made to encourage integrated pest management strategies that minimize the use of pesticides and promote pesticide use only in instances where economic thresholds and other environmental concerns warrant it. We have already begun partnerships to address this issue. Predator control has been a controversial subject among wildlife biologists and conservationists for over a decade. There has been recent acceptance of predator control in cases of the preservation of endangered, or severely declining, species. Much work has focused on the effects of mid sized mammalian predators such as raccoons, opossums, skunks, and others. Undoubtedly, most quail die from predation of one kind or another, as do all prey species. Studies have demonstrated that in certain situations, predator control can improve survival of bobwhite quail. But they also state that having good habitat first is the key; and that increasing habitat over the long term is more effective and cost-efficient than predator control. Studies show that the intensity with which predator control must be practiced is beyond the scope of most landowners. Other studies have shown that the removal of some predators such as coyotes and bobcats can actually increase quail predation because these

animals help control predators that are more detrimental to quail. Regardless of feelings on this issue, regulated trapping is a valued outdoor activity in Virginia. The number of licensed trappers in Virginia reached a peak of 5,293 during the 1979 -1980 trapping season. It fell to an all time low of 787 during the 1993 – 1994 season, but has since recovered to 1,419 last season. The VDGIF will do all we can to promote the sport of trapping in Virginia. And as new issues arise, we will address them as time, money, personnel and priorities allow.

Quail Focus Group

In 2007 the Director of the Department appointed a distinguished group of quail hunters referred to as the Quail Focus Group to re-address the issue of declining quail populations. The Focus Group conducted a number of meetings and eventually presented the Department's Board with the following resolution.

Resolution to highly recommend that the Board and Department place the highest priority on the restoration of wild quail populations and promote the sport of Bobwhite Quail hunting both wild and preserve birds including the development of a Bobwhite Quail Action Plan encompassing management, research, education, outreach, coordination (Utility & Power Company, Department of Forestry, Timber, Virginia Department of Transportation, ect) and specifically addressing environmental and other factors limiting quail numbers; and establishing official habitats to demonstrate the effectiveness of habitat management.

The Board unanimously adopted the resolution on January 22nd, 2008 and requested that the Wildlife Division develop a Quail Action Plan.

The Challenge

The Mission Statement of the Department begins, “*To manage Virginia’s wildlife and inland fish to maintain optimum populations of all species to serve the needs of the Commonwealth:...*”. Based on a suite of data and concerns regarding their ecological, economic, and recreational status, it is apparent that quail populations are far below optimum populations to serve the needs of the Commonwealth.

It is unequivocal; wild quail and wild quail hunting in Virginia are in peril. If something is not done now, the decline of quail will continue. The continued economic impact to rural Virginia economies will become even more significant if we continue to lose quail hunters at the current rate. Something more intangible but perhaps equally important, the call of the bobwhite quail and the legacy of the bird will be lost. Those of us that had the pleasure of hunting and hearing wild bobwhites will be left with only the memories of that call and the excitement of a covey rise. Quail are not the only wildlife species in jeopardy, a whole host of grassland and shrub dependent songbirds and wildlife face the same uncertain future.

Unfortunately, the Department's track record with successful restoration efforts of species like the wild turkey do not offer models that we can adopt for quail. The disappearance of the wild turkey in most of Virginia followed exploitation and habitat loss as Virginia was settled and developed. The eventual changes in land use that followed provided habitats that favored wild turkeys and populations quickly exploded when seed populations were provided with trap and transfer programs. In contrast, today the challenge is reversed for quail. We are witnessing a free-fall in quail populations that is the result of the same landscape habitat changes that have favored turkey, deer, resident Canada geese and bear. These highly recognized and enjoyed species have proven more adaptable to the modern landscape than quail, grouse, woodcock, and many non-game species. Adequate deer, turkey and bear habitat exists across much of Virginia and management for these species is now largely a matter of constructing appropriate regulations, monitoring populations, and managing human-wildlife interactions.

The trapping and transfer that worked well for turkey, deer, and bear, will not work for quail at the landscape level because adequate habitat is lacking in most instances. The lack of early-succession habitat is the reason for quail decline, and the declines of associated species. The landscape-level changes in agriculture and forestry that have occurred in Virginia over the past 50 or more years coupled with the near doubling of the State's human population during that time period have caused the quail decline. The primary solution to the decline is large-scale habitat restoration.

The answer to this dilemma is to create suitable habitats at a spatial scale to support viable populations. The big challenge is how? The Department has made valiant attempts in the past to meet this challenge. Some evidence suggests that progress was being made in a focal area in Halifax County. However, the previous quail plan was not given adequate time, funding, or personnel. Funding and personnel limitations still persist today, so the challenge to restore quail populations is made even more difficult given the expansion of other Department programs and demands from the public. The Deer Management Assistance program, for example, now serves almost 1,000 cooperators on over 1.5 million acres. The expansion of the black bear population has demanded DGIF personnel attention to deal with public safety issues related to nuisance bears. Clearly a new approach is needed to restore quail in Virginia.

This new approach must begin with the Department. As the Quail Focus Group recommends, we must place a high priority on quail restoration and management. Department staff must be fully aware of conservation programs for quail and become advocates for habitat development. In addition, the Department cannot work alone. If we are to succeed, the resources and will of the entire conservation community in Virginia will be needed. The challenge to restore quail and quail habitats is enormous given that landscape-level habitat changes will be needed on private lands. The situation that currently exists in Virginia, and throughout quail range, has come about slowly as a result of long-term changes in agriculture and forestry practices. Economic interests have driven these changes and the reversion to historic practices is unlikely. In addition, the human population will continue to grow and further limit the area in which quail restoration can be successful. Fortunately, a complete reversal is not necessary and only a

small percentage of the landscape is needed to help restore quail. A primary challenge will be to educate our citizens about the status of quail and other early succession species in peril and motivate them to action. Chances are that most of the habitat development that has been achieved over the past 10 years has taken place on lands of conservation minded landowners. The future focus may need to be with landowners and farms where a connection to quail or conservation has not been a priority.

One suggestion is to relate quail habitat to bees and other pollinators. Every farmer recognizes the importance of bees and other insects for pollination of their crops. Due to low numbers of native bees and other pollinators in many areas, farmers are actually paying beekeepers to bring hives in to increase crop pollination rates. There is global recognition that pollinators are declining and many use habitat types similar to those of quail. Marketing the planting of flowers and shrubs for pollinators could create or improve habitat for quail. Moreover, most Virginians, and certainly those from rural areas know the call of the bobwhite quail and probably associate the call with positive feelings towards wildlife and nature. We should effectively market the call where possible to motivate landowners to manage their lands for quail and their song. The bobwhite call should be made part of all Department media productions.

This conservation community effort will require strong and productive partnerships with other state, federal, private organizations, and companies working towards a common goal of restoring quail populations. Current management achievements fall very short of the needs for quail restoration in Virginia established under the Northern Bobwhite Conservation Initiative. New and expanded programs will be needed. Additional funding is critical because current Department funding is inadequate to meet the needs identified in this plan. We suggest all funding mechanisms be explored which could include a Habitat Stamp, Conservation Endowment Fund, or user fee which would provide for habitat restoration and purchase of public lands. The Habitat Stamp offers the greatest potential for securing the funding levels needed on a long-term basis.

Successful programs in Georgia and Missouri give hope that similar successes are possible in Virginia. Success will likely not come quickly as it will take time to establish habitats and for quail populations to respond. Planning for quail conservation efforts should rely on the framework provided by the NBCI. We propose to intensify management efforts in 6 Focus Areas based on Soil and Water Conservation District Areas. Habitat Teams will fully implement available resources of the Farm Bill and we propose to supplement habitat development by funding Wildlife BMP practices, which have gone unfunded for several years.

We propose to evaluate the plan by monitoring quail populations using all available census techniques including the breeding bird survey, the rural mail carrier survey, the quail call count survey, and quail hunter survey. Because it will take time to design and implement programs and there will be a time lag for habitats to become fully developed and quail populations to respond, we propose to begin evaluating the success of the program 5 years after implementation. To have any chance of success, the programs must be fully funded and operational for a minimum of 5 years. The plan that follows

will guide the Department in our activities for quail restoration over the next 5 years. Given the breadth and depth of the Action Plan, the Goals, Objectives, and Strategies are organized by priority.

GOAL 1: Generate new funding mechanisms to support quail restoration.

Objective 1: Provide additional resources to fully fund the Quail Action Plan.

Strategies:

1. Collaborate with the Quail Focus Group to identify potential secure long-term funding dedicated to quail and other habitat programs.
2. Create an endowment fund to support habitat development, habitat maintenance, or research programs for early-succession wildlife species. Seek donations from individuals and businesses to support the fund.
3. Work with the General Assembly to create a habitat stamp that would be required for everyone buying a hunting or fishing license. One half of the habitat stamp proceeds would be dedicated to purchasing lands or waters for hunting or fishing and the other half would be dedicated to the management of private lands for early-succession habitat.
4. Consider a Wildlife Management Area user fee, the proceeds from which would be dedicated for equipment, habitat development, or habitat maintenance on WMAs.
5. Develop an intra-agency, multi-divisional grant writing team to identify and garner grant money for habitat projects of all types.

GOAL 2: Educate the public on the status of Quail and other Early Succession Wildlife Species.

Objective 1: Increase awareness of the status of quail and early succession species.

Strategies:

1. Report the status of quail and the Quail Action Plan in all available media, with particular emphasis on agriculture and rural electric cooperative and agricultural publications.
2. Develop a full service web site for landowners and staff to gain knowledge of the status of quail and become informed of management options.
3. Develop educational modules and certification for early-succession habitat management for DGIF and other agency staff.

4. Develop DVD on habitat management techniques with assistance from VDGIF Information and Education Section.
5. Develop school educational modules that focus on quail and early-succession habitat. These could incorporate the quail habitat and testing DVD produced by Progressive Farmer Magazine in conjunction with the University of Kentucky

GOAL 3: Improve quail populations in their primary range in Virginia.

Objective 1. Increase the quantity and quality of habitat for quail and early succession species on agricultural lands.

Strategies:

1. Establish closer working relationships with those federal agencies that manage Farm Bill Programs. Provide cost sharing to hire 4 NRCS Biologists in each of the 4 Soil and Water Conservation Districts to facilitate technical and financial assistance available through the Farm Bill and State BMPs.
2. Create **Quail and Early Succession Wildlife Management Teams** consisting of staff from the Natural Resources Conservation Service, The Farm Service Agency, Soil and Water Conservation Districts, Department of Conservation and Recreation, and the Department of Game and Inland Fisheries to facilitate the delivery of USDA Farm Bill Programs that benefit quail and early succession wildlife species. Provide for cross-training of Teams to educate staff of program need and details.
3. Provide funding for State Wildlife BMP practices.
4. Meet the National Bobwhite Conservation Initiative goals for establishing Conservation Reserve Program grass and improvable agricultural lands over the next 10 years, within the core areas identified as having the greatest potential.
5. Make every effort to become engaged in the bio-fuels / bio-energy movement. Promote the QAP at meetings where bio-fuels are discussed. Hold an agency training event / awareness workshop on bio-fuels issues / trends.
6. Develop a volunteer corps of Habitat Improvement Teams (HIT Teams) similar to Kentucky, Missouri and other states. These teams often consist of retired persons with equipment and some habitat management background. These teams would help landowners implement cost-share

practices they may be unable to implement on their own. We would keep a list of teams by region to refer landowners to. Some may even be able to charge an equipment maintenance fee to cover repairs to their equipment, but this would be a free or reduced cost service.

7. Develop a volunteer corps of Habitat Advisory Teams (HAT Teams). These teams would make site visits and offer quail management advice.
8. Survey landowners to identify factors limiting participation in Farm Bill Programs. Identify factors that are limiting the implementation of approved USDA Farm Bill programs for early succession species. By identifying common factors limiting implementation and providing solutions significant gains in habitat development may be expected.
9. Work with utility and gas companies to promote early succession habitat on right-of-ways and other lands
10. Develop specific practices for promoting pollinator species on farms, by adjusting planting mixtures to include flowering plants preferred by pollinators, and by increasing the incentives payments for this practice and leaving portions of fields unsprayed.
11. Promote the use of control burning where possible to create and maintain early succession habitat. Provide a list of consultants or businesses that provide control burning as a service.
12. Work with the Department of Transportation to develop habitats where appropriate. Develop recommendations for habitats that would feature pollinators, require less mowing, and identify appropriate set-backs.
13. Work with Joint Ventures, Bird Conservation Initiatives, North American Bird Conservation Initiative personnel, DGIF Wildlife Diversity staff, and others to identify core areas in Virginia with a large overlap of early-succession species of concern to prioritize management and target funding.
14. Develop inter-agency grant writing teams to help ascertain money for habitat projects.
12. Develop a “soldiers for wildlife” program designed to help returning war veterans re-adjust to non-combatant lifestyles while accomplishing on the ground habitat work for wildlife. These soldiers and marines would be on active duty, assigned temporarily to DGIF Wildlife Management Areas to help with habitat development.

Objective 2. Increase the quantity and quality of habitat for quail and early succession wildlife species on forest lands.

Strategies:

1. Establish closer working relationships with state agencies, federal agencies, consultants, and forest landowners for management of forest habitat for quail. Include staff of Virginia Department of Forestry, Virginia Department of Conservation, U.S. Forest Service, and key timber companies on the **Quail and Early Succession Wildlife Management Team** to facilitate the delivery of USDA Farm Bill Programs and State BMP Practices. Provide for cross-training of Teams to educate staff of program need and details.
2. Work with the Department of Forestry to develop a set of Best Management Practices (BMPs) for pine-reforestation and thinning to promote early succession habitat, including the diversity required by pollinators. There is a desperate need for more plant diversity on intensive pine reforestation sites. Pine re-forestation has the potential to establish more ES habitat acres than any other common land use practice.
3. Promote the development of Long-Leaf Pine (CP-36) stands.
4. Promote the development of oak savannahs.
5. Increase early succession habitat management on selected Department of Forestry State Forests.
6. Work with US Forest Service to develop management plans for old fields, fire lines, gated roads, and open woodland habitats.

Objective 3: Create a Virginia Quail Council (VQC) composed of conservation organizations to actively support the Virginia Quail Action Plan through the promotion and application of land management practices and programs that increase the quality and quantity of quail habitat on agricultural and forested landscapes.

Strategies:

1. Identify state, federal, and nongovernmental agencies to serve on the Quail Council.
2. Host a meeting of conservation organizations to review the status of quail, obtain input for the Quail Action Plan, and propose the organization of the Quail Council.

3. Develop a Memorandum of Agreement between the Department and conservation partners to promote quail restoration through habitat development.
4. Conduct at least annually, follow-up VQC meetings to maintain momentum, and determine past year's activities.
5. Insure VQC is recognized by Joint Ventures and other partners as a viable conservation group.
6. Conduct annual workshops on habitat management, Farm Bill programs and other topics relevant to conservation partners on the VQC.

GOAL 4: Establish Quail and Early Succession Wildlife Focus Areas.

Objective 1: Identify areas to focus habitat management and cost-share efforts. Area selection should be based on habitat potential, but also landowner interest, agency interest, and other factors that contribute to success.

Strategies:

1. Identify one Soil and Water Conservation District (SWCD) per District Area as a Quail and Early Succession Focus Area (Appendix B).

Tentatively, the 6 SWCD identified include:
Area I – Headwaters SWCD, DGIF Region 4
Area II – Culpeper SWCD, DGIF Region 5
Area III – Three Rivers SWCD, DGIF Region 1
Area IV – Big Walker SWCD, DGIF Region 3
Area V – Halifax SWCD, DGIF Region 2
Area VI – Chowan Basin SWCD, DGIF Region 1.
2. Coordinate with appropriate state and federal agencies on the selection of SWCDs as Focus Areas.
3. Utilize Management Teams as referred to in Goal 2 to identify and prioritize opportunities for early succession habitat development within the Focus Areas.
4. Management teams will promote all state and federal cost share programs for agriculture and forestry practices that produce early succession species habitat.
5. Prioritize funding of WHIP, EQIP, and BMP proposals in Quail Focus Areas.

6. Intensify outreach and recruitment of farmers and farms to incorporate quail and early succession species habitat development in Focus Areas.
7. Establish 1,000 to 5,000 acre blocks of farms and or forests to enhance landscape level impacts of quail habitat development efforts. Consider providing additional incentives to develop these large management units.
6. Monitor quail populations and evaluate the success of management activities.

GOAL 5: Increase statewide recreation related to quail.

Objective 1: Increase public and private lands wild quail hunting opportunities.

Strategies:

1. Consider ways to increase youth hunting opportunities to recruit youth to the sport of quail hunting.
2. Work with other federal, state, and private agencies to develop new hunting policies and programs to encourage and promote quail hunting opportunities which may include regulated quail hunting or lottery quail hunts.
3. Secure more lands for public hunting by purchase or lease. Explore opportunities to create tax incentives to landowners that make their lands available for public hunting.
4. Increase early-succession habitat development efforts on all DGIF lands when budget allows, in addition to demonstration areas.

Objective 2: Increase private lands released gamebird hunting opportunities and awareness.

1. Provide hunters with current information on quail hunting preserves on the Department's web site.
2. Develop a document on the proper use of quail release methods to enhance and develop hunting opportunities on private lands.
3. Write an article for Virginia Wildlife focusing on preserve hunting.
4. Work with the Virginian Tourism Council to develop a marketing strategy for Virginia's quail and game bird hunting preserves.

5. To increase awareness of and interest in hunting preserves, work with preserve operators in offering free lottery quail hunts or free youth quail hunts.

GOAL 6: Provide Quail Management Demonstration Areas.

Objective 1: Provide model areas that can serve as examples of landscape level habitat development and maintenance for quail and early succession species.

Strategies:

1. Identify Department, state, corporate, and private lands that can serve as demonstration areas where agricultural and forestry habitat development techniques can be implemented that will support quail and other early succession wildlife species.
2. Encourage and facilitate the development of lands adjacent to Demonstration Areas so that larger tracts of habitat are developed for to better meet spatial habitat needs of quail and other early succession wildlife populations.
3. Regulate hunting if needed to provide quality quail hunting opportunities on WMAs and other public lands.
4. Provide landowners with information on soft release systems.
5. Document the success of demonstration areas in available media.



Quail Action Plan Budget

NEW DEPARTMENT INCOME

Habitat Stamp (\$10 each, 350,000 hunters & fishermen).....	\$3,500,000
Endowment Fund.....	\$??
WMA User Fee.....	\$??

QUAIL ACTION ESTIMATED EXPENSES

Fiscal Year 2010

Category	Activity	Units	Cost
Personnel	NRCS/DGIF Farm Bill Coordinator	1	\$50,000
Personnel	NRCS/DGIF Habitat Team Leaders One per NRCS Region	4	\$200,000
Services	Wildlife BMPs in 6 Quail Focus Areas \$50 per acre; 3,000 acres per Area	18,000 Acres	\$900,000
Good & Services	BMPs and booklets for rights-of-ways management	10,000 Booklets	\$15,000
Goods & Services	BMPs and booklets for forestry management practices	25,000 Booklets	\$37,500
Personnel, Goods & Services	DGIF/DOF Wildlife Technicians to manage selected State Forests	2 staff 2 tractors Equipment Supplies	\$224,600
Personnel	DGIF Assistant Quail Project Leader	1	\$65,000
Goods & Services	DGIF Demonstration Areas Powhatan and Amelia WMAs	mulching, spraying, supplies	\$40,000
Goods	Habitat Management CD's, production and duplication.	1,000	\$5,000
Goods & Services	Training workshops	6	\$3,000
	Total		\$1,540,100

Fiscal Year 2011

Category	Activity	Units	Cost
Personnel	NRCS/DGIF Farm Bill Coordinator	1	\$50,000
Personnel	NRCS/DGIF Habitat Team Leaders One per NRCS TASK Center	4	\$200,000
Services	Wildlife BMPs in 6 Focus Areas \$50 per acre, 4,000 acres per Area	24,000 Acres	\$1,200,000
Personnel, Goods & Services	DGIF/DOF Wildlife Technicians to manage selected State Forests	2 staff Supplies	\$140,000
Personnel	DGIF Assistant Quail Project Leader	1	\$65,000
Goods & Services	DGIF Demonstration Areas Powhatan and Amelia WMAs	mulching, spraying, supplies	\$40,000
	Total		\$1,695,000

Fiscal Year 2012

Category	Activity	Units	Cost
Personnel	NRCS/DGIF Farm Bill Coordinator	1	\$50,000
Personnel	NRCS/DGIF Habitat Team Leaders One per NRCS TASK Center	4	\$200,000
Services	Wildlife BMPs in 6 Focus Areas \$50 per acre, 4,000 acres per Area	24,000 Acres	\$1,200,000
Personnel, Goods & Services	DGIF/DOF Wildlife Technicians to manage selected State Forests	2 staff Supplies	\$140,000
Personnel	DGIF Assistant Quail Project Leader	1	\$65,000
Goods & Services	DGIF Demonstration Areas Powhatan and Amelia WMAs	mulching, spraying, supplies	\$40,000
	Total		\$1,695,000

Fiscal Year 2013

Category	Activity	Units	Cost
Personnel	NRCS/DGIF Farm Bill Coordinator	1	\$50,000
Personnel	NRCS/DGIF Habitat Team Leaders One per NRCS TASK Center	4	\$200,000
Services	Wildlife BMPs in 6 Focus Areas \$50 per acre, 5,000 acres per Area	30,000 Acres	\$1,500,000
Personnel, Goods & Services	DGIF/DOF Wildlife Technicians to manage selected State Forests	2 staff supplies	\$140,000
Personnel	DGIF Assistant Quail Project Leader	1	\$65,000
Goods & Services	DGIF Demonstration Areas Powhatan and Amelia WMAs	mulching, spraying, supplies	\$40,000
	Total		\$1,995,000

Fiscal Year 2014

Category	Activity	Units	Cost
Personnel	NRCS/DGIF Farm Bill Coordinator	1	\$50,000
Personnel	NRCS/DGIF Habitat Team Leaders One per NRCS TASK Center	4	\$200,000
Services	Wildlife BMPs in 6 Focus Areas \$50 per acre, 5,000 acres per Area	30,000 Acres	\$1,500,000
Personnel, Goods & Services	DGIF/DOF Wildlife Technicians to manage selected State Forests	2 staff supplies	\$140,000
Personnel	DGIF Assistant Quail Project Leader	1	\$65,000
Goods & Services	DGIF Demonstration Areas Powhatan and Amelia WMAs	spraying, supplies	\$40,000
	Total		\$1,995,000

Appendix A. 1996 Virginia Bobwhite Quail Management Plan summary.

The following were identified as important problems contributing to the quail decline in Virginia:

1. increased reliance on cool season grasses,
2. decreased use of prescribed burning,
3. increased acreage of dense pine plantations,
4. trends towards “cleaner” farms,
5. lack of consideration for wildlife in U.S. Department of Agriculture (USDA) farm programs,
6. unrealized opportunities to improve utility rights-of-way for quail,
7. lack of areas which demonstrate good quail habitat,
8. lack of knowledge on availability of quail habitat and effects of landscape changes,
9. lack of understanding of predation impacts on quail in fragmented habitats,
10. impacts of changing pine forestry practices,
11. impacts of pesticides on quail, and
12. impacts of releasing pen-reared quail on wild quail populations.

Strategies were outlined and a budget developed to address each of the problems over a 5-year period. Included in these strategies were the following actions:

1. establish pastures in native warm season grasses of 10 acres or greater in all major beef producing counties to demonstrate their desirability,
 9. work with the Department of Forestry (DOF) to establish fire crews to assist in controlled burning,
 10. host workshops to address various educational gaps,
 11. developing pine management demonstration areas in all major loblolly pine counties,
12. establish 1,000 acres of field borders per year,
13. adding a full time position to work on opportunities to include wildlife considerations in Farm Programs,
14. evaluating the impacts of reducing mid-sized mammalian predators on quail populations, and
15. participate in a multi-state effort to evaluate the impacts of hunter harvest on quail populations.

Implementation of the plan met with varied success.

1. Grass drills were purchased to help establish native warm season grasses (NWSG). NWSG demonstration areas were established on 49 farms. Most fescue was eradicated on Department Wildlife Management Areas in the Piedmont and Tidewater Regions. Training workshops were conducted for Natural Resource Conservation Service (NRCS), Department of Defense (DOD), and Virginia Department of Transportation (VDOT). NRCS increased emphasis on NWSG's.
2. Strategies to increase prescribed burning met with moderate success. DOF established a Certified Prescribed Burn Manager law and certified almost 400

- managers. Burn trailers were made available to landowners but utilization was low. Furthermore, there were few private contractors that burned and the Department did not establish a prescribed burn crew.
3. Forty-three pine thinning demonstration areas were developed. A pine management booklet was produced and 6 workshops conducted.
 4. Habitat development on private lands increased. Forty landowner workshops were held. New wildlife cost-share practices were developed and added to the Department of Conservation and Recreation (DCR) Best Management Practice (BMP) program. As a result 1,496 acres of land were left idle, 552 acres of field borders were created, and 1,400 acres of tall fescue were converted to quail habitat. A cooperative DOF-DGIF program reduced field border shrub bundle prices and created 18 miles of field borders.
 5. A closer working relationship was established with the NRCS Technical Committee, local Soil and Water Conservation Districts (SWCDs), Forage and Grassland Council and other agricultural groups. Greater emphasis on wildlife was realized in agricultural policy. Significant effort was extended in training agricultural and forestry professionals about wildlife habitat needs. Protected mowing dates, improved seeding recommendations and acceptance of NWSG improved habitat conditions for quail. Mid-Atlantic agricultural and wildlife needs were identified in the development of the Farm Bill.
 6. Two major Virginia utility companies adopted landowner habitat programs on their transmission lines. A workshop was held on right-of-way management for 16 organizations.
 7. Thirty-one habitat demonstration areas were established.
 8. Extensive education efforts were accomplished including 12 workshops for the public, and publications including *Beyond the Food Patch: A Guide to Providing Bobwhite Quail Habitat*, *Providing for Quail Broods*, *Successful Wildlife Plantings*, and *Managing Pines for Profit and Wildlife*.
 9. Population monitoring increased.
 10. Research projects were completed including habitat modeling for quail habitat using Landsat imagery, quail nesting ecology, quail nest predation sign, quail dispersal, a population model, a study on the effects of nest predator removal on quail recruitment and populations. A predation workshop was held.

Other habitat research projects were not implemented including best management practices for pines, assessing chemical impacts on quail, assessing the impacts of releasing pen reared quail and monitoring of diseases in pen-raised quail.

Appendix B. Soil and Water Conservation Districts and Areas in Virginia.

